

A STUDY OF ROUTINE EXPOSURE OF RECURRENT LARYNGEAL NERVE DURING THYROID SURGERY

M. K. Bora, S. Narwani, S. Agarwal, A.S. Bapna

ABSTRACT: One of the main complications of thyroid surgery is injury to recurrent laryngeal nerve (RLN), which causes severe morbidity to the patient in postoperative period. To find out the incidence of RLN injury and its consequences, a prospective study was done in a group of 142 cases during the years 1999–2000. Different types of thyroidectomies for various diseases lbw of the thyroid gland, wherein a routine identification and exposure of the P-R was done through out its full course till its entry into the larynx at cricothyroid membrane. Three cases of temporary RLN injury were found and not a single case of permanent nerve injury was seen during our study. Three cases of nonrecurrent LN were found on the right side of the gland. The temporary injury of the nerve completely recovered during 2–5 months of follow-up. We present some reviews of the literature to provide various authors views and experiences regarding injury of RLN associated with thyroid surgery.

Key Words: Berry's ligament; nonrecurrent laryngeal nerve recurrent laryngeal nerve thyroidectomy.

Thyroidectomy technique has remained fairly standard over the years. However, several minor modifications have been introduced in an effort to minimize trauma to the recurrent laryngeal nerve.

RLN injury associated with thyroid surgery is a major complication, which causes lots of suffering to the patient due to paralysis of vocal cords in terms of hoarseness of voice, food inhalation and even respiratory difficulty in bilateral vocal cord palsy. Permanent RLN injury is seen in 1–3% of thyroid surgeries, but the temporary nerve palsy is seen more frequently ICt wr he rrv theb permanent R. injury.^[1] Right recurrent laryngeal nerve is more prone to injury during thyroid surgery due to its more lateral position on this side as well as nonrecurrent laryngeal nerve being more common on the right side. Routine exposure of the recurrent laryngeal nerve can minimize the chance of injury to this nerve.

MATERIAL AND METHODS

A prospective study of 142 patients, who underwent different thyroid surgeries for different diseases of thyroid during January 1999–December 2000 were analysed for injury of RLN [Table 1] when routine identification *ink* and exposure of RLN throughout its course up to its entry into the larynx was ensured before ligation of the inferior thyroid artery. The other known complications of thyroid surgery like injury to the parathyroid glandsV injury of superior laryngeal nerve were

not included in our study. Follow up of the patients, who developed injury to the nerve was done for 6 months or more postoperatively.

Our study includes surgeries done by different surgeons in ENT Department. The age range is in between 25 and 65 years and Operative Technique before ligation of the inferior thyroid artery the 6 was identified in the tracheo-oesophagi groove and then followed. Its relation with the inferior thyroid artery was examined and then was followed up to the inferior corner of the thyroid till the artery divided into its terminal branches and the nerve entered the larynx below the cricothyroid muscle. Ligation of the artery was done after, the nerve. If the nerve was not found in its normal course a thorough search

Table 1: Operations performed for thyroid disease

Operation	Disease	No.
I	Hemithyroidectomy benign thyroid nodule	86
II	Total thyroidectomy malignancy thyroid	25
III	Completion biopsy came out to be malignancy thyroidectomy after primary surgery	13
IV	Subtotal benign diffuse goitre thyroidectomy	14
V	Near total graves disease/benign diffuse thyroidectomy goiter	4

for nonrecurrent laryngeal nerve was done.^[2] Special attention was given to the entry point of RLN into larynx where it is closely related to suspensory ligament of Berry. This is another frequent site of RLN injury. After confirming the integrity of the nerve further steps of the operation, an immediate postoperative examination by direct laryngoscopic examination was done to confirm the presence of bilateral vocal cord movement.^[3]

RESULTS

Three cases of temporary RLN injury were noticed out of the 142 patients, which developed on second–third postoperative day with symptoms of mild hoarseness of voice. All the cases underwent extensive dissection around the nerve during operation. One was being operated for carcinoma thyroid with total thyroidectomy and the other two were operated for Graves disease, where a near-total thyroidectomy was done. Integrity of the RLN was confirmed during surgery. All the patients were kept under observation with regular indirect laryngoscopic examination of the vocal cords. They started improving their symptoms at the end of 6 weeks and were asymptomatic at the end of 4–6 months.^[3] Three cases of nonrecurrent laryngeal nerve were found study. All were on the right side of the gland. Due to systematic dissection all of the nerves could be saved during surgery. Not a single case of permanent RLN injury was found in our study.

DISCUSSION

The overall incidence of permanent injury to RLN is between 1 and 3%.^[1] Permanent injury is defined as persisting paralysis of the cord more than 6 months after the surgery. This is due to transection, ligation and traction of the nerve during the procedure. The incidence of temporary injury to the nerve is in between 2.5 and 5% in various studies. This is due to temporary loss of function due to neuropraxia of the nerve as a result of over manipulation during the surgery. Some thyroid surgeries like hemithyroidectomy, total thyroidectomy, near and sub total thyroidectomy, VC and revision thyroidectomy have very high chance of injury to the RLN.^[4] Pre and Postoperative examination of the vocal cords should be done in every case. In case immediate postoperative paralysis of the cord is seen, re-exploration of the wound and exploration of the nerve in its full course should be done and attempt should be made for re-anastomosis of the nerves.^[3] But if the continuity of the nerve is ensured during the operation, re-exploration of the nerve is not needed and only observation with regular follow up is required and it is expected to recover by itself during postoperative period.

The role of routine exposure of the nerve during surgery is a subject for discussion. In a study, Kasemsuwan has found that there was insufficient evidence to support that the identification of RLN during surgery would be a significant

factor in reducing the likelihood of RLN paralysis.^[5] Mesttig found significant difference between the injury of RLN when routine identification and dissection of the nerve before ligation of thyroid artery was done.^[4] It was 5.99% when routine dissection was not done, which came down to 0.88% when the nerve was routinely identified during the operation. The incidence of noncurrent laryngeal nerve is 0.39%^[6] to 3–4%^[2] in different studies. It is also one of the causes of accidental injury to the nerve because of its abnormal course. If the surgeon is not aware of it, mainly on the right side, he might end-up injuring this nerve accidentally.

One of the common sites of injury to the nerve is at the entry point in the larynx just lateral to the ligament of Barry.^[7] Even after the nerve was dissected nicely in its lower part, the nerve may be injured while separating the gland from the Berry's ligament. So it is very important to dissect the nerve completely, and one should ensure the entry of RLN into the larynx before separating the gland from the Bb's ligament.

SUMMARY AND CONCLUSIONS

- We advise routine recurrent laryngeal nerve identification in any operation of thyroid gland. However, absolutely necessary is the identification of the nerve in the following situations.
 1. Hemithyroidectomy specially on the right side to avoid injury to nonrecurrent nerve,
 2. re-operations,
 3. carcinoma of thyroid.
- If the RLN is not easily identified in normal course, a possibility of NRLN especially on the right side should always be considered.
- Special attentions to the entry point of RLN into the larynx near the ligament of Berry, where risk of injury to the nerve is high.

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Address for Correspondence

Dr Sunita Agarwal
3/1, Heerabagh Flats,
Sawai Ram Singh Road,
Jaipur 302004,
India